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ABSTRACT

The faculty labor markets within a southern and a western state university were analyzed by discipline and compared with the national labor market. Data were obtained for 1978-1979 to 1981-1982 from two large universities, and selected comparisons were made with results of the Faculty Salary Survey by Discipline of Institutions Belonging to the National Association of State Universities and Land Grant Colleges. One university was studied longitudinally, while the other was studied for one academic year. Disciplines studied included those that experienced a decline in student enrollment over the past 5 years (e.g., education, English, history) and those that experienced enrollment growth (e.g., accounting, journalism, and marketing). Attention was directed to whether shifts in student demographics and interests have paralleled the bargaining power of some disciplines over others. Several approaches to determine the impact of national and regional competition for faculty upon the internal salary structure of the two state universities were undertaken. These methods showed a reasonably close congruence between national market factors and salaries at both institutions. (SW)

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MEASURE OF THE MARKET FACTORS IN UNIVERSITY FACULTY SALARIES

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MEASURE OF THE MARKET FACTORS IN UNIVERSITY FACULTY SALARIES

Faculty salaries account for the largest budget outlay of virtually all colleges and universities. Salaries are therefore a dominant issue and of continuing interest to institutional researchers. Four principal reasons for undertaking salary research were identified by Tuckman (1979, p. 19): (1) these studies give clues to the egocentric nature of academe; (2) the reward structure and decision making associated with that structure are important factors in understanding the way institutions operate and how alternative policies may change that reward structure; (3) such studies provide an opportunity to discover inequities, which is a first step toward correcting inequities; and (4) studying the reward structure helps to identify which activities and characteristics are rewarded and to what degree.

The "supply and demand" or market factor in faculty salaries is nationwide and intrinsic to different academic specialties. A "steady state" environment may have caused more subtle shifts in bargaining power of some disciplines over other disciplines within a given institution. Budgeting in higher education results from multilateral bargaining (a political process), and there are limitations to rationalist budgeting concepts if they are incongruent with collegial governance (Fincher, 1978; Caruthers & Orwig, 1979). Salary research may provide needed information, however, if it describes comprehensively what is happening and explains some of the complexities of academe.

The purpose of this paper is to present analyses of: the internal faculty labor market by discipline at two state universities and to make

comparisons with the national labor market. Tuckman (1976) found that the national competition for salaries adjusts more rapidly for assistant professors than for other ranks in terms of supply and demand by discipline.

Data Sources and Methods

The data sources used are comprehensive academic personnel research files of two large state-supported universities located in the western and southern regions of the United States. The period considered is from 1978-9 to 1981-2. Selected comparisons are made with results of the Faculty Salary Survey by Discipline of Institutions Belonging to the National Association of State Universities and Land Grant Colleges (NASULGC) which is conducted by Oklahoma State University. This national survey collects salaries by region, discipline, and rank for over one hundred similar institutions. These data sources allow for an investigation of internal and external supply and demand influences.

Two large state universities are used for comparative purpcses. One institution, called SW, is located in the southwest in a state with more than one state university. The other university, referred to as SE, is located in the southeast and there also exists more than one state university. The two institutions will not be compared to each other. Rather, each will be compared with national and/or regional data on average salaries by disciplines.

Two different analytical approaches will be pursued. The data from SW was employed in a longitudinal trend analysis while the SE data focused on one academic year. These two analytical approaches are considered to be complimentary and serve to illustrate the diversity of analytical techniques that can treat a similar issue.

Disciplines studied include those which have experienced a decline in student enrollment over the past five years (e.g., education, English, history) and those which have had a growth in student enrollment (e.g., accounting, journaiism, and marketing). The research considers whether or not shifts in student demographics and interests have paralleled the bargaining power of some disciplines over other disciplines. The comparisons will be made in the following sections.

Results

Longitudinal Trends in Discipline Market Factors

To look at salaries by fields over time, these specific questions are addressed:

1. Has a shifting of emphasis in salaries by discipline occurred over the past three years with respect to the participants of the NASULGC faculty salary survey?

2. Has the average salary for new assistant professors by discipline moved closer to the average salary for assistant professors over the past three years for data presented in the NASULGC faculty salary survey?

3. Is SW following the same trend as the NASULGC faculty survey participants in emphasizing changes in salaries by discipline?

4. Is SW bringing its average salaries by discipline closer to the NASULGC faculty salary survey results?

5. Are the changes in SW average salaries by discipline dependent on the changes in undergraduate enrollment (i.e., does increased undergraduate enrollment in a discipline indicate more of an increase in the average salaries of that discipline than a discipline whose undergraduate enrollment decreased)?

To facilitate comparisons using the NASULGC data, a standardizing type of measure is employed called the salary factor. The definition for salary factor used in the NASULGC faculty salary survey is:

The ratio obtained when the average salary of a given rank for a specific discipline is divided by the average salary for the same rank which covers all disciplines.

EXAMPLE: The average salary for professors in all disciplines from the 1981-82 NASULGC faculty salary survey is $35,117. The average salary for accounting professors is $39,068. Thus the salary factor for accounting professors computes to be 1.11 (i.e., $39,068 ÷ $35,117 = 1.11). The average salary for accounting professors at SW is $36,442, thus producing a salary factor of 1.04 ($36,442 ÷ $35,117 = 1.04).

Shift in average salaries by discipline. The emphasis in salaries by discipline over the past three years with respect to the participants of the NASULGC faculty salary survey was investigated. The comparison of the national salary factor information by discipline for 1978 and 1981 is given in Table 1. To test whether the rankings of disciplines for the two time periods have changed, a nonparametric procedure (Wilcox sign rank test) was applied to the data in Table 1. The Wilcox test indicated that there were only three or fewer chances in 100 that rankings had not changed.

New assistant professor salaries vs. assistant professor salaries. The average salary for new assistant professors by discipline was compared to the average salary for assistant professors over the past three years for data presented in the NASULGC faculty salary survey (Table 2). A new salary factor for new assistant professors was developed. It is defined as follows:

The ratio of the average salary for new assistant professors by discipline compared to the average salary of assistant professors over all disciplines.

To compare salary changes over the time period, a matched t-test was performed on the differences using the salary factors which adjust for inflation. A t equaling 6.7 with 23 degrees of freedom was found which is obviously indicative of a very low probability that there was not a change over time. Thus, the salary factors show that new assistant professor salaries have changed over the three years compared to assistant

TABLE 1

A COMPARISON OF NATIONAL SALARY

FACTORS BY DISCIPLINE FOR 1978 AND 1981

DISCIPLINE AREA	PROFESSOR			ASSOC PROFESSOR			ASST PROFESSOR			NEW ASST PROFESSOR			INSTRUCTOR			OVERALL RANKS		
	NAT SALARY FACTOR			NAT SALARY FACTOR			NAT SALARY FACTOR			NAT SALARY FACTOR			NAT SALARY FACTOR			NAT SALARY FACTOR		
	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF
ACCOUNTING	1.08	1.11	.03	1.13	1.19	.06	1.22	1.27	.05	1.27	1.29	.02	1.18	1.16	(.02)	1.07	1.10	.03
AGRICULTURE DISCIPLINES	.92	.93	.01	.97	.98	.01	1.00	1.00	.00	1.02	1.00	(.02)	.96	.96	.00	.99	.99	.00
ART	.88	.86	(.02)	.89	.89	.00	.89	.87	(.02)	.90	.85	(.05)	.94	.98	.04	.87	.86	(.01)
BUSINESS ECONOMICS	1.01	1.06	.05	1.10	1.10	.00	1.10	1.10	.00	1.05	1.13	.08	1.06	1.08	.02	1.07	1.07	.00
BUSINESS MGMT & ADMIN	.99	1.11	.12	1.10	1.15	.05	1.06	1.21	.15	1.23	1.23	.00	1.26	1.20	(.06)	1.07	1.11	.04
CHEMISTRY	1.03	1.04	.01	.99	.99	.00	.98	.97	(.01)	.98	.94	(.04)	.95	1.02	.07	1.09	1.10	.01
COMMUNICATIONS (JOURNALISM)	.94	.95	.01	.95	.96	.01	.95	.93	(.02)	.89	.92	.03	.97	.90	(.07)	.88	.88	.00
CURRICULUM & INSTRUCTION	.92	.90	(.02)	.98	.97	(.01)	.96	.93	(.03)	.96	.90	(.06)	.96	1.00	.04	.94	.92	(.02)
EDUCATIONAL ADMINISTRATION	1.01	1.00	(.01)	1.05	1.05	.00	1.06	1.04	(.02)	1.18	1.01	(.17)	1.39	1.04	(.35)	1.12	1.08	(.04)
ENGINEERING DISCIPLINES	1.02	1.06	.04	1.06	1.10	.04	1.07	1.16	.09	1.09	1.20	.11	1.04	1.07	.03	1.09	1.14	.05
ENGLISH, GENERAL	.96	.96	.00	.93	.92	(.01)	.90	.87	(.03)	.86	.83	(.03)	.89	.89	.00	.89	.88	(.01)
FOREIGN LANGUAGES, GENERAL	.96	.91	(.05)	.93	.91	(.02)	.93	.90	(.03)	.93	.82	(.11)	.99	.99	.00	.92	.86	(.06)
GEOGRAPHY	1.00	.97	(.03)	.99	.98	(.01)	.98	.93	(.05)	.93	.90	(.03)	1.05	1.01	(.04)	.99	.96	(.03)
GEOLOGY	.99	1.01	.02	.99	.99	.00	.98	1.00	.02	.99	.96	(.03)	.98	1.06	.08	1.04	1.05	.01
HISTORY	.98	.96	(.02)	.94	.94	.00	.93	.91	(.02)	.90	.84	(.06)	1.09	1.06	(.03)	1.00	.98	(.02)
HOME ECONOMICS DISCIPLINES	.94	.96	.02	.98	.96	(.02)	.99	.99	.00	1.01	.97	(.04)	1.00	1.01	.01	.85	.85	.00
MATHEMATICS, GENERAL	1.03	1.01	(.02)	.99	.99	.00	.97	.95	(.02)	.95	.95	.00	.95	.92	(.03)	1.01	1.00	(.01)
MUSIC	.88	.88	.00	.91	.92	.01	.91	.90	(.01)	.88	.86	(.02)	.99	.91	(.08)	.90	.90	.00
PHILOSOPHY	.98	.97	(.01)	.96	.93	(.03)	.93	.89	(.04)	.88	.86	(.02)	1.04	.97	(.07)	.96	.95	(.01)
PHYSICS, GENERAL	1.03	1.03	.00	1.00	1.01	.01	.98	1.00	.02	.99	1.00	.01	1.16	.84	(.32)	1.12	1.12	.00
POLITICAL SCIENCE & GOVT	1.02	.99	(.03)	.98	.98	.00	.95	.91	(.04)	.92	.86	(.06)	1.02	1.01	(.01)	.99	.98	(.01)
PSYCHOLOGY, GENERAL	1.03	1.00	(.03)	.98	.95	(.03)	.95	.92	(.03)	.94	.91	(.03)	1.03	1.04	.01	1.03	1.01	(.02)
SOCIOLOGY	1.04	1.00	(.04)	.99	.97	(.02)	.96	.92	(.04)	.93	.87	(.06)	1.02	1.00	(.02)	.99	.97	(.02)
SPEECH, DEBATE & FOR SCI	.93	.90	(.03)	.95	.92	(.03)	.95	.91	(.04)	.93	.86	(.07)	.95	.95	.00	.87	.84	(.03)

Source: NASULGC

TABLE 2

A COMPARISON OF SALARY FACTORS FOR NEW ASSISTANT PROFESSORS FOR 1978 AND 1981

NASULGC FACULTY SALARY SURVEY

DISCIPLINE AREA	AVG SALARY FOR NEW ASST PROFESSOR			
	1978 SALARY	SALARY FACTOR	1981 SALARY	SALARY FACTOR
ACCOUNTING	$20,695	1.21	$26,851	1.23
AGRICULTURE DISCIPLINES	$16,832	0.98	$21,096	0.97
ART	$14,620	0.85	$17,567	0.80
BUSINESS ECONOMICS	$17,122	1.00	$23,558	1.08
BUSINESS MGMT & ADMIN	$19,219	1.12	$25,451	1.17
CHEMISTRY	$15,839	0.93	$19,456	0.89
COMMUNICATIONS (JOURNALISM)	$14,386	0.84	$19,061	0.87
CURRICULUM & INSTRUCTION	$15,637	0.91	$18,743	0.86
EDUCATIONAL ADMINISTRATION	$19,166	1.12	$21,076	0.96
ENGINEERING DISCIPLINES	$17,923	1.05	$25,204	1.15
ENGLISH, GENERAL	$13,961	0.82	$17,280	0.79
FOREIGN LANGUAGES, GENERAL	$15,117	0.88	$17,096	0.78
GEOGRAPHY	$15,026	0.88	$18,627	0.85
GEOLOGY	$16,117	0.94	$20,013	0.92
HISTORY	$14,562	0.85	$17,390	0.80
HOME ECONOMICS DISCIPLINES	$16,754	0.98	$20,219	0.93
MATHEMATICS, GENERAL	$15,365	0.90	$19,689	0.90
MUSIC	$14,223	0.83	$17,937	0.82
PHILOSOPHY	$14,351	0.84	$17,899	0.82
PHYSICS, GENERAL	$16,067	0.94	$20,845	0.95
POLITICAL SCIENCE & GOVT	$14,949	0.87	$17,836	0.82
PSYCHOLOGY, GENERAL	$15,199	0.89	$18,862	0.86
SOCIOLOGY	$15,045	0.88	$18,095	0.83
SPEECH, DEBATE & FOR SCI	$15,081	0.88	$17,871	0.82
AVG SALARY FOR ASST PROFESSOR (OVER ALL DISCIPLINES)	$17,112		$21,841	

Source: NASULGC

professors. The data in Table 2 indicate that the differences between average salaries for these two categories of assistant professors has increased from 1978 to 1981. It should be noted that this finding contradicts the claims of some department chairmen at SW.

National trend vs. SW. Those disciplines whose salary factor for overall ranks increased or decreased at SW were compared with the national survey salary factor which increased or decreased (Tables 1 and 3). Based upon this information, a distribution of matches and mismatches was constructed as follows:

Table 4

	Increased		Decreased		No Change	
NASULGC SURVEY	5		13		6	
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
SW RESULTS	4	1	10	3	3	3

This distribution illustrates that SW did not follow the same trend as the NASULGC faculty salary survey for changes in salaries by discipline.

SW vs. national average. To determine if SW was bringing its average salaries by discipline closer to the NASULGC faculty salary survey results, the 1978 salary factors for overall ranks were compared and the difference calculated. The same process was done for 1981, as shown in Table 5. A matched t-test of the two sets of differences yielded a t of 18.5 (d.f.= 23). This indicates that there was a substantial change in SW average salaries by discipline compared to the national average salaries. In 19 of the 23 fields, SW moved closer to the national average.

Salaries and undergraduate enrollment. The last question considered was whether or not changes in SW average salaries by discipline are

TABLE 3

A COMPARISON OF SW SALARY FACTORS BY DISCIPLINE FOR 1978 AND 1981

DISCIPLINE AREA	PROFESSOR			ASSOC PROFESSOR			ASST PROFESSOR			NEW ASST PROFESSOR			INSTRUCTOR			OVERALL RANKS		
	SW SALARY FACTOR			SW SALARY FACTOR			SW SALARY FACTOR			SW SALARY FACTOR			SW SALARY FACTOR			SW SALARY FACTOR		
	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF	1978	1981	DIFF
ACCOUNTING	1.00	1.04	.04	1.11	1.14	.03	1.18	1.33	.15	1.23	1.35	.12	-	-	-	1.04	1.11	.07
AGRICULTURE DISCIPLINES	.90	.92	.02	1.01	.98	(.03)	.99	1.00	.01	.96	1.01	.05	.98	1.09	.11	.97	1.04	.07
ART	-	.74	-	1.09	.82	(.27)	.82	.83	.01	.73	.82	.09	-	-	-	.70	.72	.02
BUSINESS ECONOMICS	1.02	1.11	.09	1.03	1.12	.09	1.15	1.13	(.02)	1.12	1.16	.04	-	-	-	1.13	1.07	(.06)
BUSINESS MGMT & ADMIN	.87	1.04	.17	1.10	1.21	.11	1.13	1.16	.03	1.14	1.20	.06	1.30	-	-	.98	1.02	.04
CHEMISTRY	.97	1.02	.05	.95	.95	.00	.99	.94	(.05)	.96	-	-	.74	.77	.03	1.01	1.04	.03
COMMUNICATIONS (JOURNALISM)	.87	.96	.09	.89	.93	.04	.95	.94	(.01)	1.15	1.08	(.07)	.90	.86	(.04)	.76	.86	.10
CURRICULUM & INSTRUCTION	.81	.86	.05	.94	.87	(.07)	.93	.91	(.02)	.89	-	-	.99	-	-	.86	.93	.07
EDUCATIONAL ADMINISTRATION	.96	.95	(.01)	1.08	.85	(.23)	.97	1.04	.07	.92	-	-	.88	-	-	.84	.90	.06
ENGINEERING DISCIPLINES	.96	1.03	.07	1.00	1.06	.06	1.04	1.14	.10	-	1.24	-	.99	1.07	.08	.98	1.08	.10
ENGLISH, GENERAL	.89	.86	(.03)	1.00	.91	(.09)	.93	.81	(.12)	.99	.81	(.18)	.85	.96	.11	.74	.77	.03
FOREIGN LANGUAGES, GENERAL	-	-	-	.94	.92	(.02)	.97	.91	(.06)	.94	.87	(.07)	.82	.95	.13	.73	.75	.02
GEOGRAPHY	.91	.90	(.01)	.92	.87	(.05)	.89	.86	(.03)	-	-	-	-	-	-	.91	.96	.05
GEOLOGY	.91	.89	(.02)	.93	.93	.00	.92	.88	(.04)	.97	.91	(.06)	-	-	-	.95	.89	(.06)
HISTORY	.90	.88	(.02)	.94	.95	.01	.87	.95	.08	.91	-	-	.80	-	-	.91	.96	.05
HOME ECONOMICS DISCIPLINES	.86	.96	.10	.97	1.01	.04	1.01	.93	(.08)	.93	1.03	.10	.87	.88	.01	.76	.88	.12
MATHEMATICS, GENERAL	.90	.86	(.04)	.96	.96	.00	.97	.93	(.04)	-	.96	-	.67	-	-	.92	.89	(.03)
MUSIC	.84	.89	.05	.88	.88	.00	.99	.88	(.11)	.76	.83	.07	.87	-	-	.82	.81	(.01)
PHILOSOPHY	-	.76	-	.97	.88	(.09)	.92	.93	.01	-	-	-	-	-	-	.83	.84	.01
PHYSICS, GENERAL	.93	.84	(.09)	.94	1.04	.10	.92	.86	(.06)	.86	.82	(.04)	.64	-	-	.98	.93	(.05)
POLITICAL SCIENCE & GOVT	.83	.83	.00	.94	.89	(.05)	.83	.83	.00	.88	.84	(.04)	.68	.87	.19	.77	.84	.07
PSYCHOLOGY, GENERAL	.89	.94	.05	.92	.91	(.01)	.87	.88	.01	.86	.84	(.02)	1.07	-	-	.94	1.01	.07
SOCIOLOGY	.93	.91	(.02)	.97	.97	.00	1.06	1.02	(.04)	-	.99	-	1.08	1.14	.06	.96	.96	.00
SPEECH, DEBATE & FOR SCI	.87	.91	.04	.90	.92	.02	1.04	1.02	(.02)	-	-	-	.96	.87	(.09)	.78	.88	.10

Source: NASULGC

TABLE 5

A COMPARISON OF SALARY FACTOR DIFFERENCES FROM 1978 TO 1981

NASULGC FACULTY SALARY SURVEY vs SW

DISCIPLINE AREA	PROFESSOR			ASSOC PROFESSOR			ASST PROFESSOR			NEW ASST PROFESSOR			INSTRUCTOR			OVERALL RANKS		
	SAL FAC DIFFERENCES			SAL FAC DIFFERENCES			SAL FAC DIFFERENCES			SAL FAC DIFFERENCES			SAL FAC DIFFERENCES			SAL FAC DIFFERENCES		
	NAT	SW	DIFF	NAT	SW	DIFF	NAT	SW	DIFF	NAT	SW	DIFF	NAT	SW	DIFF	NAT	SW	DIFF
ACCOUNTING	.03	.04	(.01)	.06	.03	.03	.05	.15	(.10)	.02	.12	(.10)	(.02)	-	-	.03	.07	(.04)
AGRICULTURE DISCIPLINES	.01	.02	(.01)	.01	(.03)	.04	.00	.01	(.01)	(.02)	.05	(.07)	.00	.11	(.11)	.00	.07	(.07)
ART	(.02)	-	-	.00	(.27)	.27	(.02)	.01	(.03)	(.05)	.09	(.14)	.04	-	-	(.01)	.02	(.03)
BUSINESS ECONOMICS	.05	.09	(.04)	.00	.09	(.09)	.00	(.02)	.02	.08	.04	.04	.02	-	-	.00	(.06)	.06
BUSINESS MGMT & ADMIN	.12	.17	(.05)	.05	.11	(.06)	.15	.03	.12	.00	.06	(.06)	(.06)	-	-	.04	.04	.00
CHEMISTRY	.01	.05	(.04)	.00	.00	.00	(.01)	(.05)	.04	(.04)	-	-	.07	.03	.04	.01	.03	(.02)
COMMUNICATIONS (JOURNALISM)	.01	.09	(.08)	.01	.04	(.03)	(.02)	(.01)	(.01)	.03	(.07)	.10	(.07)	(.04)	(.03)	.00	.10	(.10)
CURRICULUM & INSTRUCTION	(.02)	.05	(.07)	(.01)	(.07)	.06	(.03)	(.02)	(.01)	(.06)	-	-	.04	-	-	(.02)	.07	(.09)
EDUCATIONAL ADMINISTRATION	(.01)	(.01)	.00	.00	(.23)	.23	(.02)	.07	(.09)	(.17)	-	-	(.35)	-	-	(.04)	.06	(.10)
ENGINEERING DISCIPLINES	.04	.07	(.03)	.04	.06	(.02)	.09	.10	(.01)	.11	-	-	.03	.08	(.05)	.05	.10	(.05)
ENGLISH, GENERAL	.00	(.03)	.03	(.01)	(.09)	.08	(.03)	(.12)	.09	(.03)	(.18)	.15	.00	.11	(.11)	(.01)	.03	(.04)
FOREIGN LANGUAGES, GENERAL	(.05)	-	-	(.02)	(.02)	.00	(.03)	(.06)	.03	(.11)	(.07)	(.04)	.00	.13	(.13)	(.06)	.02	(.08)
GEOGRAPHY	(.03)	(.01)	(.02)	(.01)	(.05)	.04	(.05)	(.03)	(.02)	(.03)	-	-	(.04)	-	-	(.03)	.05	(.08)
GEOLOGY	.02	(.02)	.04	.00	.00	.00	.02	(.04)	.06	(.03)	(.06)	.03	.08	-	-	.01	(.06)	.07
HISTORY	(.02)	(.02)	.00	.00	.01	(.01)	(.02)	.08	(.10)	(.06)	-	-	(.03)	-	-	(.02)	.05	(.07)
HOME ECONOMICS DISCIPLINES	.02	.10	(.08)	(.02)	.04	(.06)	.00	(.08)	.08	(.04)	.10	(.14)	.01	.01	.00	.00	.12	(.12)
MATHEMATICS, GENERAL	(.02)	(.04)	.02	.00	.00	.00	(.02)	(.04)	.02	.00	-	-	(.03)	-	-	(.01)	(.03)	.02
MUSIC	.00	.05	(.05)	.01	.00	.01	(.01)	(.11)	.10	(.02)	.07	(.09)	(.08)	-	-	.00	(.01)	.01
PHILOSOPHY	(.01)	-	-	(.03)	(.09)	.06	(.04)	.01	(.05)	(.02)	-	-	(.07)	-	-	(.01)	.01	(.02)
PHYSICS, GENERAL	.00	(.09)	.09	.01	.10	(.09)	.02	(.06)	.08	.01	(.04)	.05	(.32)	-	-	.00	(.05)	.05
POLITICAL SCIENCE & GOVT	(.03)	.00	(.03)	.00	(.05)	.05	(.04)	.00	(.04)	(.06)	(.04)	(.02)	(.01)	.19	(.20)	(.01)	.07	(.08)
PSYCHOLOGY, GENERAL	(.03)	.05	(.08)	(.03)	(.01)	(.02)	(.03)	.01	(.04)	(.03)	(.02)	(.01)	.01	-	-	(.02)	.07	(.09)
SOCIOLOGY	(.04)	(.02)	(.02)	(.02)	.00	(.02)	(.04)	(.04)	.00	(.06)	-	-	(.02)	.06	(.08)	(.02)	.00	(.02)
SPEECH, DEBATE & FOR SCI	(.03)	.04	(.07)	(.03)	.02	(.05)	(.04)	(.02)	(.02)	(.07)	-	-	.00	(.09)	.09	(.03)	.10	(.13)

Source: NASULGC

dependent on the changes in undergraduate enrollment. In Table 6, the ratio of Fall Semester, 1981 undergraduate enrollment to the Fall Semester, 1978 undergraduate enrollment by discipline is compared with the ratio of 1981 overall salary factor to the 1978 overall salary factor by discipline. This method determines the percent of increase or decrease in undergraduate enrollment and average salaries over the three-year period. If the resulting ratio is larger than 1, an increase occurred; if it is less than 1, a decrease occurred. The correlation between ratios was found to be -.29. This weak correlation provides little support that changes in undergraduate enrollment impact upon changes in average salaries.

Market Factors Controlling for Seniority and Background Factors

In this section, a differing but parallel analytical approach was employed to compare the SE institution with national and regional averages. The specific focus of this section is upon attempting to determine if salary market factors can be isolated from contaminating influences such as length of contract period, administrative duties, time in rank, and highest degree. The analysis sought to determine if the discipline weights obtained in a multiple regression of faculty salaries are usable market factor indicators as measured by national and regional average salaries. A further aim was to test whether or not there were differing market impacts by rank. This procedure was suggested by Hunter (1979).

The method used by this analysis starts with a multiple regression for each rank; in this case for professor, associate professor, and assistant professor. Discipline was entered into the multiple regression by dummy variables. The resulting weights were then incorporated into bivariate scatterplots and regressions of the discipline weights from the multiple regression for each discipline with national and regional average

TABLE 6

PERCENT CHANGE IN ENROLLMENT vs PERCENT CHANGE IN SALARY FACTOR BY DISCIPLINE AT SW

DISCIPLINE AREA	1981 UNDGRAD ENROLLMENT / 1978 UNDGRAD ENROLLMENT	1981 SALARY FACTOR / 1978 SALARY FACTOR
ACCOUNTING	1.1386	1.0673
AGRICULTURE DISCIPLINES	0.9156	1.0722
ART	1.0977	1.0286
BUSINESS ECONOMICS	1.0875	0.9469
BUSINESS MGMT & ADMIN	1.6819	1.0408
CHEMISTRY	0.6726	1.0297
COMMUNICATIONS (JOURNALISM)	0.9272	1.1316
CURRICULUM & INSTRUCTION	0.9382	1.0814
EDUCATIONAL ADMINISTRATION	N/A	N/A
ENGINEERING DISCIPLINES	1.0978	1.1020
ENGLISH, GENERAL	0.9028	1.0405
FOREIGN LANGUAGES, GENERAL	0.7051	1.0274
GEOGRAPHY	0.8298	1.0549
GEOLOGY	1.9767	0.9368
HISTORY	0.5662	1.0549
HOME ECONOMICS DISCIPLINES	0.7906	1.1579
MATHEMATICS, GENERAL	1.0612	0.9674
MUSIC	0.9143	0.9878
PHILOSOPHY	1.5555	1.0120
PHYSICS, GENERAL	0.8696	0.9490
POLITICAL SCIENCE & GOVT	1.0000	1.0909
PSYCHOLOGY, GENERAL	0.9942	1.0745
SOCIOLOGY	0.6526	1.0000
SPEECH, DEBATE & FOR SCI	0.7826	1.1282

salaries by discipline. These regressions using the discipline weight with average salaries are given in Table 7.

Not surprisingly, the strongest correlations between the weights and average salaries are for assistant professors. This close congruence suggests a responsiveness to market factors being highest for assistant professors. However, of greater interest than the correlations themselves, are the bivariate regression coefficients. These regression coefficients may be interpreted as follows:

*Professor. The regression coefficient between the discipline weights and the national average salaries for full professors was equal to an exact 1.00. This finding shows that a $1.00 change in national average salaries is associated with a $1.00 change in the discipline weight. The exact match for the discipline weight and national salary average at SE did not hold when the weights were compared with regional full professor average salaries. The scatterplot (Figure 1) shows that the weights at SE with regional average salary yielded a regression coefficient of 1.22. The coefficient means that a $1.00 change in regional average salaries is associated with a $1.22 change at SE. This steeper rate of change is indicative of a greater impact for discipline at SE than is the case in the region.

*Associate Professor. For associate professors, the weights with national average salaries are .93 and .95 for regional average salaries. With both weights below one, it appears that discipline differentials at SE are maintained at a slightly lower differential than for the national or regional data.

*Assistant Professors. The coefficient for the national average is 1.07. This shows a greater degree of discipline differentials

Table 7

Bivariate Regressions of Discipline Weights with National and Regional Average Salaries for SE

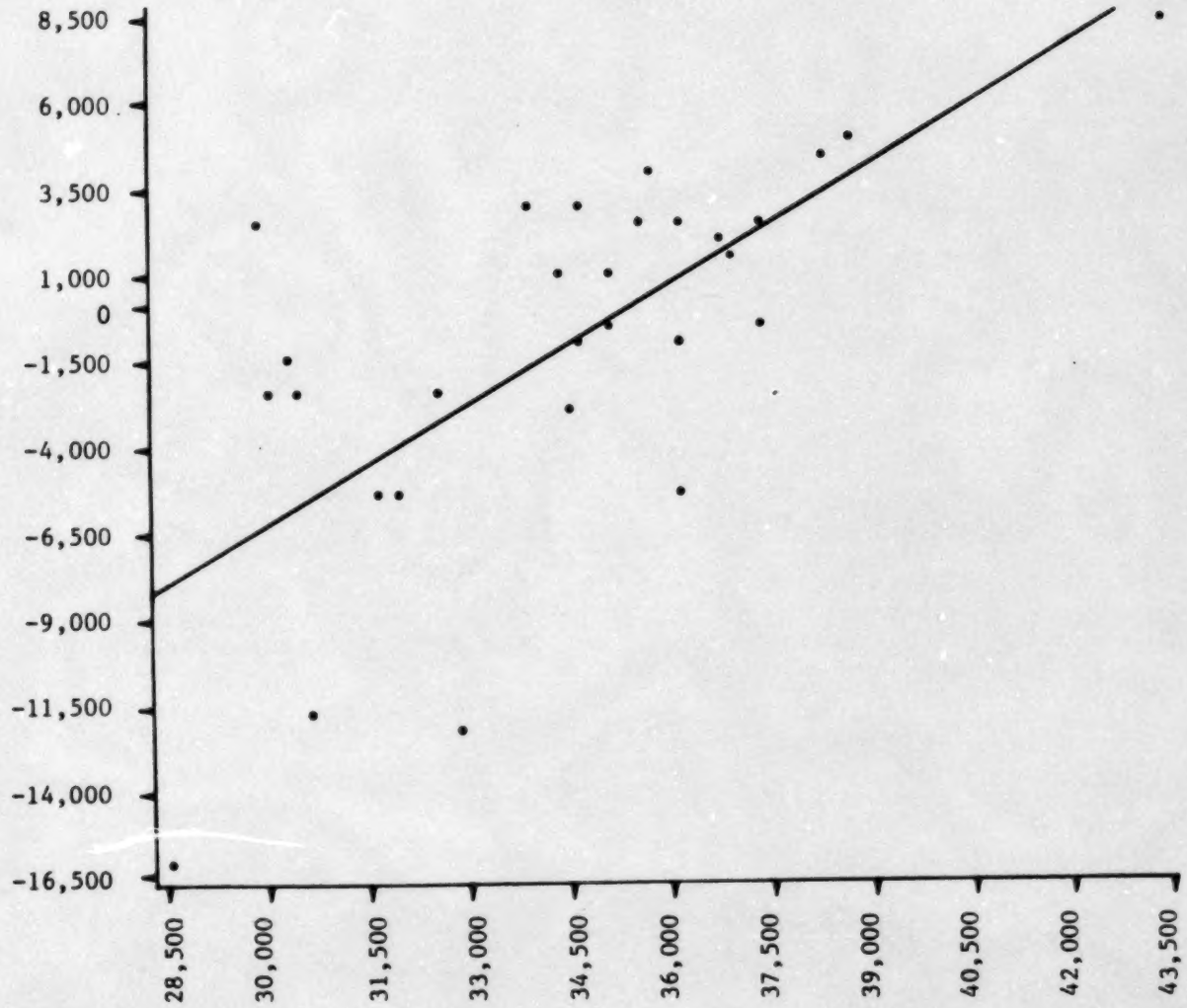
RANK	REGRESSION COEFFICIENT (b)		CONSTANT (a)		R^2		N	
	ALL	REGION	ALL	REGION	ALL	REGION	ALL	REGION
Professor	1.00	1.22	-35,831	-43,655	.37	.46	32	29
Associate Professor	.93	.95	-24,637	-24,880	.48	.53	25	34
Assistant Professor	1.07	.95	-21,185	-18,391	.60	.59	35	34
New Assitant Professor	.82	.72	-15,116	-12,665	.54	.58	35	31

discipline weight = b[National/Regional Avg. Salary] + a

Figure 1

PLOT OF DISCIPLINE WEIGHTS OF PROFESSORS AT SE

WITH NATIONAL AVERAGE SALARIES OF PROFESSORS



than is present in the national data. However, the regional data yielded a coefficient of .95, which reflects slightly less discipline differentials than those calculated at SE.

*New Assistant Professors. Because of the small number of cases involved, it was not possible to develop a separate regression equation for new assistant professors. The regression of new assistant professor averages upon the assistant professor weights was done to see how responsive the salaries of assistant professors at SE were to the competition for new assistant professors. As previously noted, this yielded the highest correlations, but also resulted in the lowest regression coefficients. In Figure 2, the scatterplot for assistant professor weights with new assistant professor averages is given. The coefficient of .82 can be interpreted to mean that a $1.00 change in the average for new assistant professors is associated with a $.82 change in the weight for assistant professors. Similarly, the regional weight is .72, also lower than that of the national data. Several possible interpretations exist. The low weight may be indicative of a lessening responsiveness to the market for new assistant professors. On the other hand, it may be the result of an inertia on assistant professors themselves in responding due to personal and situational factors, such as the high costs of new mortgages, spouse's employment, and the perceptions of a favorable environment in which to live.

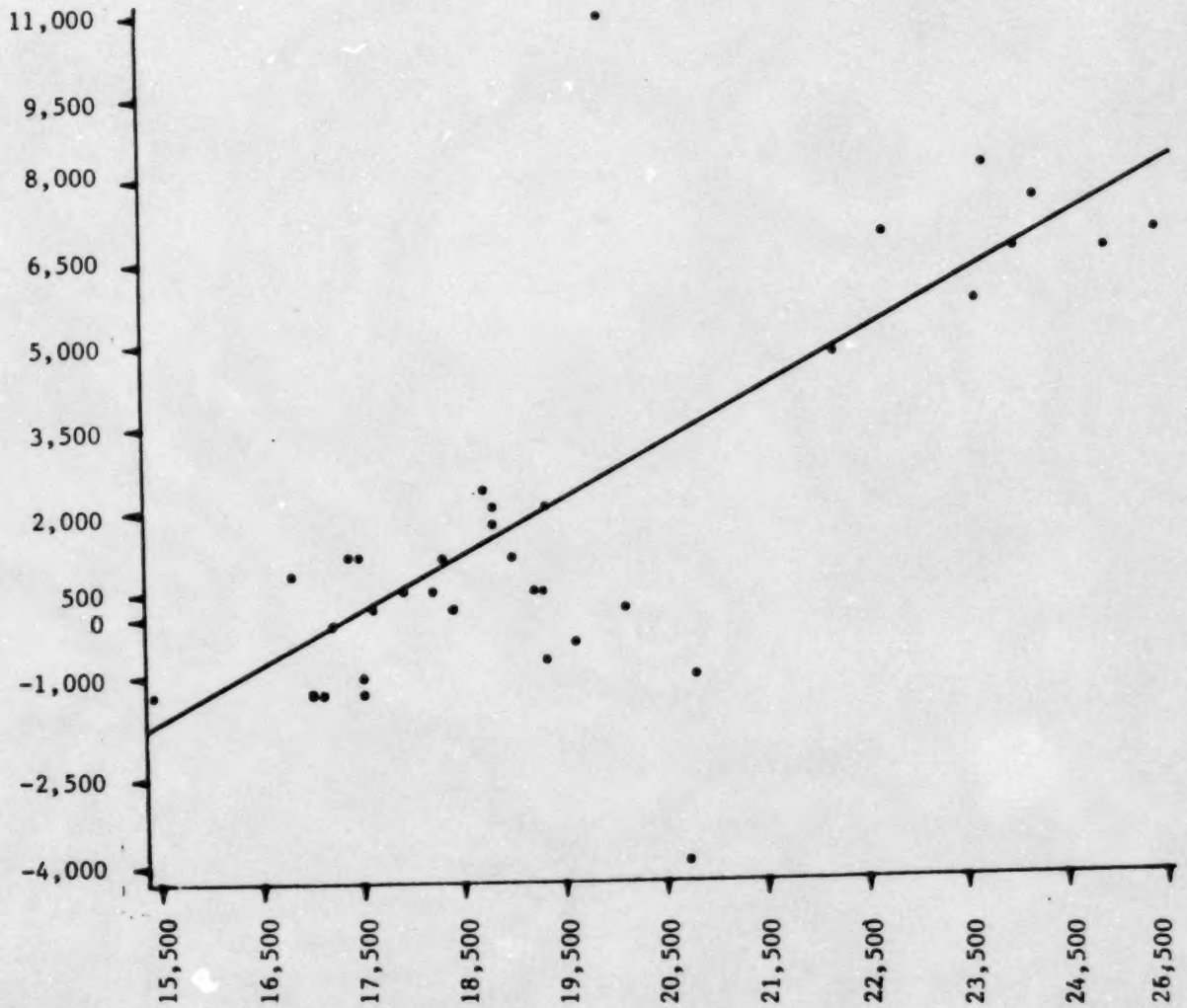
Discussion

This paper has presented several ways to determine the impact of national and regional competition for faculty upon the internal salary

Figure 2

PLOT OF DISCIPLINE WEIGHTS OF ASSISTANT PROFESSORS

AT SE WITH NATIONAL AVERAGE SALARIES FOR NEW ASSISTANT PROFESSORS



structure of two state universities. These two institutions are over 1,500 miles apart. The various methods presented showed a reasonably close congruence between national market factors and salaries at both institutions.

The analysis at SW focused on longitudinal changes. It found that there had been some shift among disciplines over time at the national level. Additionally, the salary difference between new assistant professors and other assistant professors was shown to have increased over time. Average salaries at SW were becoming, over time, closer to national average salaries. However, there was no clear relationship between average enrollment changes and average salary changes over time.

At SE salary differentials by disciplines more closely matched the national data than the regional data. For professors, this institution was above the region. However, for other ranks, especially new assistant professors, it was below the region.

A portrayal of faculty salary trends provides information to support academic planning and to reassess established personnel goals and practices. At many institutions, a source of both legal and administrative concern is that of salary equity (Baldus & Cole, 1980) and competitiveness in maintaining academic programs. With the pressures of inflation, cutbacks in federal funds, demands upon state and local budgets, along with the difficulty of maintaining endowments and gifts, few institutions can afford to make mistakes in salary allocations. These analytical methods were presented to give a range of possible techniques for an institutional research office to assess where a given institution is compared to its market--national and/or regional. It is felt that the methods presented are both reliable and effective means of assessing an individual institution's

relationship to its market. While no statistical technique can replace judgment and wisdom of decision makers about individual cases, these analytical techniques can be used as input into the decision making process.

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Figure 1

PLOT OF DISCIPLINE WEIGHTS OF PROFESSORS AT SE

WITH NATIONAL AVERAGE SALARIES OF PROFESSORS

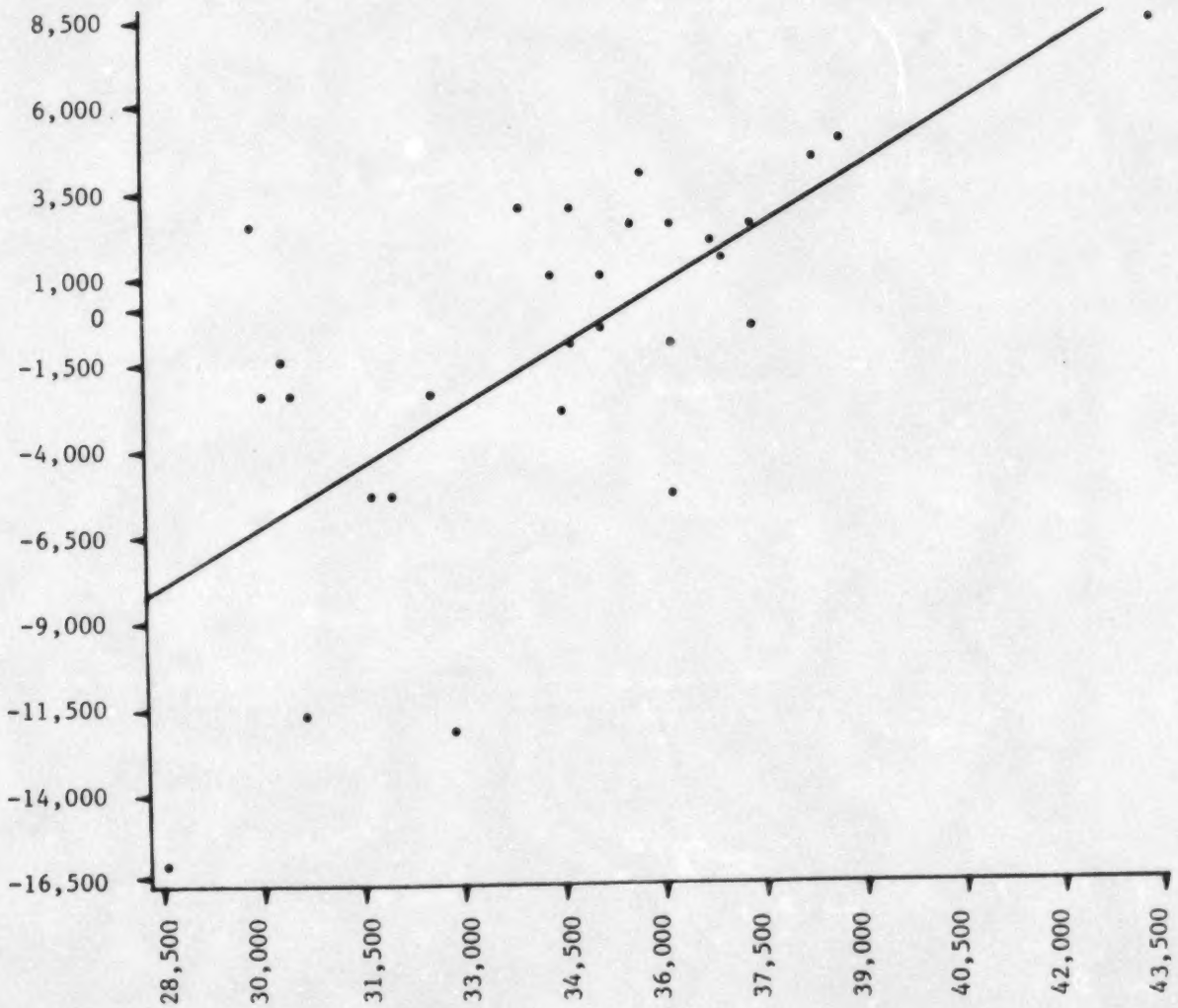

Figure 2

PLOT OF DISCIPLINE WEIGHTS OF ASSISTANT PROFESSORS

AT SE WITH NATIONAL AVERAGE SALARIES FOR NEW ASSISTANT PROFESSORS